NOTES.

THE following fifteen candidates have been selected by the council of the Royal Society to be recommended for election into the society:—Prof. E. H. Barton, Mr. W. R. Bousfield, Mr. S. G. Brown, Prof. E. G. Coker, Prof. G. G. Henderson, Mr. J. E. Littlewood, Prof. A. McKenzie, Prof. J. A. MacWilliam, Mr. J. H. Maiden, Prof. H. H. W. Pearson, Prof. J. A. Pollock, Sir L. Rogers, Dr. C. Shearer, Prof. D'Arcy W. Thompson, Mr. H. Woods.

SIR RAY LANKESTER writes:—"The serious illness of Prof. Metchnikoff, of the Institut Pasteur, has been briefly noticed by some of the daily papers. Your readers include many friends and admirers of my friend, who will be glad to have accurate information on the subject. It commenced some time before Christmas with distressing symptoms, which were described as 'une crise du cœur.' In order to avoid the daily journey from Sèvres, where he usually resides, and the climbing of the stairs leading to his laboratory, Prof. Metchnikoff, accompanied by Madame Metchnikoff, took up his residence in rooms in the Institut Pasteur which were placed at his disposal, and so he was able to continue his work with the least possible fatigue. But trouble in the lungs now appeared, and developed into an attack of pleurisy and pneumonia, which necessitated his removal to the hospital of the Institut. There he has been for some weeks in a very serious condition. To-day, however (February 26), I hear from Madame Metchnikoff that there is better news. For the third time the pleural cavity has been tapped and a litre of liquid removed, which has given great relief. His medical attendants believe that the pleurisy will now soon disappear. The pulmonary congestion has already disappeared. I will let you know when I hear again from Paris."

MR. DOUGLAS W. FRESHFIELD, president of the Royal Geographical Society, M. Henri Curdier, the French Orientalist, and General Schokalski, the Russian oceanographer, have been elected honorary members of the Italian Royal Geographical Society.

WE learn from *Science* that the Bruce gold medal of the Astronomical Society of the Pacific has been awarded to Dr. G. E. Hale, director of the Mount Wilson Solar Observatory.

THE King's prize of 400*l*. for human physiology has been awarded by the Accademia dei Lincei of Rome to Dr. Filippo Bottazzi, who holds the chair of physiology in the University of Naples.

DR. C. W. HAYES, who was chief geologist to the U.S. Geological Survey from 1902 to 1911, has died at Washington in his fifty-seventh year. He was geologist to the Nicaraguan Canal Commission in 1898–9, and had written largely on theoretical and economic geology.

DR. J. D. FALCONER, lecturer in geography in Glasgow University and Swiney lecturer in geology at the British Museum, has been selected by the Secretary of State for the Colonies for the post of temporary assistant district officer in the northern provinces of Nigeria. Dr. Falconer has been granted leave of absence from the University from the end of the present term.

MR. HAROLD COX will give an address on "Industrial Development," before the Institution of Civil Engineers on March 7. In inviting Mr. Cox to address the institution on this subject, the council has considered that the present time calls for some earnest attention on the part of engineers to the economic issues which, after the war, must influence profoundly the future of engineering, as well as the industrial and commercial enterprises which are vital to its progress both in this country and abroad.

SOME of the bones of the gigantic fossil elephant (*Elephas antiquus*) obtained last summer from Chatham have just been placed on exhibition in the Geological Department of the British Museum (Natural History). With the humerus and scapula have been arranged the corresponding bones of the mammoth from Ilford to show the comparatively small size of the latter. The massive fore foot of the Chatham specimen is especially impressive. The relative smallness of the molar teeth is also noteworthy.

THE death is announced, at Streatham, on February 18, of Prof. R. H. Smith. Accounts of his career appear in *Engineering* and the *Engineer* for February 25. He was born in 1852 in Edinburgh, where he completed his scientific training at the University. His practical training was obtained during an apprenticeship with Messrs. Tennant and Co., of Leith; he had further experience in the Whitworth works, and in the drawing office of Messrs. Wohlers, Berlin. He was appointed professor of civil and mechanical engineering at the Imperial University, Tokio, and afterwards held the professorship in civil, mechanical, and electrical engineering at the Mason College, Birmingham. Prof. Smith contributed many articles on engineering subjects to the technical Press, and was the author of numerous books on commercial economy in steam, heat, and power plants, electric traction, etc.

WE regret to announce the death of Richard Dedekind, which occurred on February 11, at Brunswick, his birthplace (1831) and residence for the greater part of his life. Dedekind is best known by his two arithmetical tracts, "Was sind u. was sollen die Zahlen?" and 'Ueber Stetigkeit u. irrationale Zahlen," and by his supplements to successive editions of Dirichlet's "Zahlentheorie." In the latter he developed the theory of ideal primes, invented by Kummer, so as to make it applicable to any field of algebraic numbers whatever. In his two tracts he applies the notion of a *cut* (Schnitt) so as to give an exact definition of an irrational number, and a precise explanation of the continuity of the ordered set of real arithmetical quantities. Each of these achievements is enough to place him in the first rank of pure mathematicians for all time. Not a voluminous writer, his briefest note invariably bears the stamp of his profound and original genius; and, like Dirichlet and Hermite, with whom he may be aptly compared, he wrote with a combination of clearness and elegance difficult to equal, and impossible to surpass.

We regret to learn, from an obituary notice in the *Victorian Naturalist* for January, of the death of Dr. T. S. Hall, for more than twenty years lecturer in biology in the University of Melbourne, and before that director of the School of Mines at Castlemaine. Dr. Hall's original investigations dealt chiefly with the palæontological aspect of his subject, and he was recognised as a leading authority on the graptolites of Victoria. In 1901 the Geological Society of London awarded him the balance of the proceeds of the Murchison fund in recognition of his researches. He took a very active part in the organisation of scientific work in Australia, and had been president both of the Royal Society of Victoria, and of the Field Naturalists' Club; he also did a great deal of useful work in connection with the Australasian Association for the Advancement of Science. He became personally known to many British men of science on the occasion of the recent visit of the British Association to Australia, when he not only acted as local secretary of the Zoological Section in Melbourne, but rendered valuable services in other directions also. Dr. Hall's charming personality, his sound common sense, and his extraordinarily keen sense of humour endeared him to a large circle of friends, by whom his loss will be very deeply felt. He was fifty-eight years of age at the time of his death.

At the meeting of the Buteshire Natural History Society, held on February 8, in the society's library at the Bute Museum and Laboratory, the curator, Mr. L. P. W. Renouf, explained at some length the aims and objects of the laboratory and museum under its new *régime*. Briefly, these are to get together a complete collection of the fauna and flora of Bute and its more or less immediate waters, to supplement the actual collection with a card index of occurrences over an extended period so as to have a complete local history of the species, and to provide accommodation for anyone desirous of working at any of the problems of natural history. Emphasis was laid on the exceptional advantages offered by Bute for such an undertaking, its size, position, and industries combining to make it an ideal site for the work. The laboratory offers all the necessary facilities for research work, and possesses equipment for the carrying on of both marine and fresh-water investigations, and the museum already contains the nucleus of a very fine collection. Intending workers should apply to Mr. Renouf, who will be glad to supply any particulars.

The subordination of science forms the subject of the leading article in *Engineering* for February 25. Our national neglect of science has long been manifest, but there are also some reasons for believing that the fault lies in part with the scientific man himself. British scientific men, including engineers, have formed a habit of rendering the nation gratuitous services of the greatest intrinsic value. There have been many instances of this since the commencement of the war, and, unfortunately, the general attitude towards such services is to value them at cost price. It is probable that the public would take a much higher view of the worth of these services had the scientific experts concerned, like the lawyers, politicians, and certain trade-unionists, made demand for adequate remuneration. There is no doubt also that our unfortunate educational tradition has much to do with the public attitude towards the scientific and engineering expert. There is not a little reason for believing that the country would derive great benefit from an Act making it illegal for any schoolboy under sixteen years of age to devote more than one hour a week to Latin and another hour to Greek. Our public schools in the past have failed to provide a general education, but have been devoted largely to the attempt to convert most of the pupils into classical specialists.

Prof. Mohn has published, through the Fridtjof Nansen Fund, a discussion of the meteorological observations made by the Norwegian Antarctic Expedition of 1911–12, under Capt. Roald Amundsen. The memoir is a pamphlet of seventy-eight pages, and is written in English. The observations at Framheim, the base of the edge of the Barrier near King Edward Land, are discussed in detail, and a full account is given of the less complete observations made on the sledge journey to the south pole and back, including a discussion of the heights deduced from the aneroid and boiling point observations. Great prominence is given to wind, and the relation of the Antarctic winds to other conditions is worked out in a remarkable series of wind roses. The climate of Framheim is dealt with by calculating normals based on the five-years' observations available at McMurdo Sound, taking account of the relation between Amundsen's figures and the synchronous observations of the Scott Expedition. Prof. Mohn states that the climate of Framheim, which was the southernmost meteorological station in the world, may be characterised as having rather low atmospheric pressure, and very low temperature, both lower than at McMurdo Sound (maximum observed, −0·2° C. minimum, −59° C.), the yearly mean being −24° C., as compared with −17·4° C. for the same latitude in the northern hemisphere. The vapour tension was small, and the relative humidity and cloudiness were moderate; no rain was observed, and snow fell one day out of five. The prevailing wind direction was easterly, and the force moderate, averaging 20 metres per second, being much less than at McMurdo Sound, and gales were very infrequent.

At the Manchester meeting of the British Association last year it was strongly represented that the association, with its great breadth of interest, might afford an effective mechanism for the investigation of many of the problems of national and Imperial importance which will arise after the close of the war, and already call, or will call later, for scientific investigation and advice. Before the meeting the Section of Economics had made investigation into the questions of outlets for labour after the war, of the effect of the war on credit, currency, and finance, and of industrial harmony. The Engineering Section set on foot at the Manchester meeting an inquiry into problems affecting the national welfare; and at the same time, at the instance of the Chemical Section, a research committee was appointed to inquire into the question of economy in fuel and allied problems. The wider suggestion, as affecting the work of the sections generally, has been taken up since the meeting by the council, which appointed a committee to deal with the matter, and, on its recommendation, called upon the organising committees of the sections to submit questions, in their various departments of science, which might profitably be investigated. We are informed that a number of important subjects for investigation have already been suggested, and no doubt some of these will find a place in the programme of the next annual meeting, but others are being dealt with in the meantime. There is good reason to hope that this extension of the work of the association will have valuable and far-reaching results.

In *Ancient Egypt,* part i. for 1916, Miss Alice Grenfell publishes a catalogue of the fine collection of scarabs formed by Field-Marshal Lord Grenfell while commanding in Egypt. These are illustrated by a long series of photographs and drawings. It is suggested that the symbols of the double and single spiral signify "life," and that the fish, which originally symbolised Isis and fertility, was utilised by early Christian converts who had no objection to use pagan symbols. Prof. Flinders Petrie adds a note fixing the date of these scarabs. The collection, as a whole, is of the highest value to students of Egyptian religion.

In the January issue of *Man,* Prof. Ashby and his colleagues, MM. Themistocles Zammit and Giuseppe Despott, describe the excavations made in Malta during 1914. The megalithic building, on a site known as Id-debdieba, "the place of the Echo," has been fully examined. The object of this remarkable structure is still uncertain. Among the more remarkable objects unearthed in the course of the excavations are six pillars of limestone or sandstone, cylindrical in shape, but some tapering at one end, of the type usual in Maltese megalithic ruins. Flint implements were rare, but potsherds were abundant, mostly from vessels of Neolithic times, that is to say, contemporary with the original building, and fragments of dark red bricks with a very rough texture, some of which were evidently parts of floors or walls of ovens.

The supplement to the forty-fourth annual report of the Local Government Board, containing the report of the Medical Officer (Dr. Newsholme) for 1914–15, has just been issued. Dr. Newsholme surveys the measures taken on account of the war for co-operation between the civil and military sanitary services, and reviews the incidence of infectious diseases in England and Wales and the development of tuberculosis work over the country. Dr. Bruce Low furnishes a report on the epidemiology of typhus fever in recent years, which deals mainly with the distribution of this disease in the various countries of the globe. Dr. Twort makes a preliminary report on the bacteriology of infantile diarrhœa. Various micro-organisms were isolated by means of a special medium and examined, but so far no evidence has been obtained of the existence of any specific bacterium for this disease. Owing to war conditions, the report is much shorter than usual.

The report just issued by the Medical Research Committee, under the National Health Insurance Act, on "Cerebro-Spinal Fever during the Epidemic of 1915," brings together, in a clear and concise form, a great mass of very careful and well-planned bacteriological work, done by many observers. The authors of the report are Prof. F. W. Andrewes, Prof. Bullock, and Prof. Hewlett; one could scarcely find three names of higher authority. The work done is, of course, scarcely intelligible to those who are not bacteriologists; but the chief conclusions are important to all. That the "meningococcus" is indeed the specific germ of the disease, remains the sure foundation of the work. It is a true species, "as species go amongst bacteria." There are subspecies of it; but these ought none the less to be called meningococcus, not para- or pseudo-meningococcus. From this "specificity" of meningococcus, it follows that bacteriological examination is the necessary method for a positive diagnosis of the case. The whole subject of the detection and treatment of "carriers" is very carefully considered. It appears that even the most vigorous and varied treatments of the back of the throats of carriers may fail to rid them of the germs; the report is more hopeful of good results from "an open-air life and the provision of as much fresh air as possible." For the treatment of the declared disease, the specific antitoxin did not, in the adverse conditions of last winter, fulfil men's expectations: it did not achieve so much as it achieved in the Belfast epidemic of 1907, and in some American epidemics. It remains the only "rational" treatment; but we cannot put it anywhere near diphtheria antitoxin in the records of the art of healing. That is the fault of the disease, not of the bacteriologists.

Miss Maud Haviland, in *British Birds* for February, makes some welcome additions to our records of the life-history of the Lapland bunting. Her notes are based on observations during her stay on the Yenisei. Though she obtained some beautiful photographs of the nest and of nestlings, she failed to obtain pictures of the adults, which refused even to approach the nest while the tent containing the camera was in the neighbourhood. She succeeded, however, in obtaining some valuable notes on the habits of the adults, and the feeding of the young, as well as on the migratory habits of this species. The many peculiarities of this bunting are skilfully brought out by contrasting it with the snow bunting and other species haunting the same area.

Ornithologists, for some inscrutable reason, have paid but little attention hitherto to the many problems presented by the study of the renewal of plumage by moulting. Yet this is a theme of far wider importance than is commonly supposed. Recently, however, our knowledge of this subject has been materially increased by several important papers, and not the least of these is that which appears in the *Scottish Naturalist* for February by Dr. C. B. Ticehurst. His summary of his work, however, is very inadequate, and it is at times difficult to be sure of the precise value he attaches to his observations, which are further marred by the inexcusable use of the term, "tertials," though he is not the only offender in this matter.

THOSE who are inclined to doubt whether museums play anv useful part in war-time should read the account of what is being done in the Leicester Museum, by means of an Infant Welfare Exhibition, to combat the appalling mortality among infants. This account appears in the *Museums Journal* for February, and has been written by Mr. E. E. Lowe, the curator, who is responsible for the scheme and its execution. This mortality, which is largely preventable, is brought out with startling vividness by means of a series of wooden columns, that for infants up to twelve months old standing no fewer than 11 ft. high, while that for the death-rate between the ages from five to twenty is but 2¾ of an inch high. The food values of human, cow's, and condensed milk, the injurious effects of "dummies," of "push-carts," and of certain kinds of clothing, are brought out by means of specimens, models, or diagrams. Models also are used to demonstrate the dangers of contamination by flies. The keenest interest has been displayed in this exhibition since its installation, especially by the poorer classes, for whom it was more especially intended. Hence it is devoutly to be hoped that this and similar museums will not be closed by the local authorities from mistaken notions of economy in war-time.

A NEW genus of Ranunculaceæ, Beesia, named in honour of the firm of Bees, Ltd.—to whose enterprise so much botanical exploration in China, Burma, and the Himalayas has been accomplished—has been described by Prof. Bayley Balfour and Mr. W. W. Smith in Notes from the Royal Botanic Garden, Edinburgh, vol. ix., No. xli. The new plant, *Beesia cordata,* which is figured, is allied to the Japanese genus Glaucidium, and to the Japanese and American Hydrastis. It was collected by Mr. F. Kingdon Ward in northern Burma, at 9000 ft. altitude, in the deep shade of the rain forest.

THE annual report of the Agricultural Department, St. Vincent, shows that a good deal of useful work has been done in the past year in connection with efforts to raise new strains of cotton, particularly with reference to disease resistance. The progress of the cotton industry is well shown in the tables covering the period of the last ten years. The area planted in 1905–6 was 790 acres, and in 1914–15 4226 acres, though in 1911–12 it rose to more than 5000 acres. The weight of lint in 1905–6 was 137,460 lb., and in 1910–11 reached as high a figure as 561,526 lb., the average yield of lint per acre for the ten years being 128 lb.

WE notice in *La Geographie* for November, 1915, that the hydrographic department of the French Admiralty have replaced the German names in Kerguelen by names of French origin. It must be very galling to the French to see an abundance of German names scattered over the chart of their Antarctic island, especially as German explorers were never sparing in their naming or very mindful of previous names. At the same time, however, the practice of changing established names is a dangerous one if carried far, and it is to be hoped, in the interests of geographical accuracy, this principle will not be applied indiscriminately, for confusion would certainly be the result. The new names for Kerguelen appear in the *Avis aux Navigateurs* of May 29, 1915.

AN article on the Peru-Bolivia boundary commission, by Sir Thomas Holdich, in the *Geographical Journal* for February (vol. xlvii., No. 2) is another reminder, were any required, of the losses that geographical science has sustained by the war. In January, 1911, the services of four British officers were lent to the Government of Peru to determine the boundary with Bolivia. Two of them, Capt. H. S. Toppin, Northumberland Fusiliers, and Lieut. C. G. Moores, R.E., have already lost their lives in action. Capt. Toppin was to have written the report for the Peruvian Government. When that became impossible the Royal Geographical Society was asked to undertake the work, and it was placed by the society in the hands of Sir Thomas Holdich. Moreover, in certain circumstances in the dispute the Royal Geographical Society was made arbitrator by the Peruvian Government. In the same number of the *Geographical Journal* is a paper by the late Capt. Toppin on the diplomatic history of the Peru-Bolivia boundary.

MR. F. E. WRIGHT, writing in the Journal of the Washington Academy of Sciences, vi., 1, describes a device for solving equations of the form $a=bc$, where a, b, c are functions for which suitable scales of representation have been plotted. The method is apparently based on the geometrical construction for the product of two quantities by treating the latter as the fourth term of a proportion having unity as the first. It is, however, not easy to follow from the description, but it may be useful to overcome the difficulties in cases where some process of the kind has to be frequently used.

DICHROIC fog is one of the troubles of the amateur photographer when plates are developed under difficult conditions as to temperature or otherwise. An investigation of its causes, prevention, and cure is given by M. Ernest Coustet in the *Revue générale des Sciences* (xxvi., 21). Of the causes, the most important is the presence of traces of the fixing salt in the developer or of the developer in the fixing salt. The latter appears to be the most important, and thorough washing before fixing the best preventive. A high temperature and a weak fixing bath are favourable to fogging. Of remedies the author recommends neutral (never acid) permanganate followed by bisulphite of soda.

THE issue of the index numbers of the two sections of *Science Abstracts* completes the volumes for the year 1915. The physics volume has 770 pages and the electrical engineering volume 622, while the number of abstracts are 1789 and 1152 respectively. The volumes are therefore quite equal in size to those issued before the war, though there seems to be a small decrease in the number of articles abstracted, partly no doubt due to the reduction in the amount of scientific work being published. The name indexes include names of authors and those mentioned in abstracts, and cover twenty-nine and fifteen pages respectively. The subject indexes extend to fifty-two and thirty pages respectively, and the method of arrangement adopted in past years is continued. The facility with which a piece of research can be looked up in "Science Abstracts" makes it invaluable to those engaged in scientific work in either physics or electrical engineering.

THE Journal of the Royal Society of Arts for December 31 contains an interesting article by Sir Charles Watson on the origin of English measures of length. The author is of opinion that the measures of length used by the different nations of the world are for the most part derived from a common origin. He regards the longer measures of distance as having been first used by a people who possessed a high degree of astronomical knowledge, who were acquainted with the form of the earth and were able to carry out accurate geodetic measurements. He explains the means by which the ancients determined the unit for terrestrial measurements of distance, now known as a geographical mile, and he then proceeds to consider how the subdivisions of the geographical mile were assimilated with the cubit. Two new cubits appear to have been invented for this purpose; one of these was equivalent to 18·225 English inches, and the other, afterwards known as the Babylonian royal cubit, was equal to 20·25 inches. Sir Charles points out that the English sea mile is exactly the same as the geographical mile of the Babylonian system; that its tenth part, the cable length, is identical with the stadium; and that generally the English measures of length are no haphazard modern invention, but have come down to us from prehistoric times.

A SHORT article on the production of potash in the United States appears in the *Chemical Trade Journal* of February 12. In 1915 steps were taken to produce potash salts on a commercial scale in the United States, and the plant of the Universal Products Corporation began to operate in October last at Marysvale, Utah, producing both potassium sulphate and alumina in high-grade form. The rated capacity of the works is from 25 to 30 tons of 95 per cent. potassium sulphate per day. The present plant handles about 150 tons of alunite daily, and plans are being made to double its capacity. At Searles Lake, California, the American Trona Corporation proceeded with the construction of its works to treat the potassium-bearing brine of that desert basin by the Grimwood process. At Trona (Searles Lake) only mixed salts are produced from the first part of the process, and these are refined at the port of San Pedro, California. The initial plants are expected to produce 100 tons of potash and 30 tons of borax daily. The alunite deposits of the Florence Mining and Milling Company at Marysvale, Utah, is to be exploited by a newly-formed corporation, the Utah Potash Syndicate. Some plants were erected elsewhere to utilise the potash of the felspars, but did not get into operation on a commercial scale.

"THE *Athenaeum* Subject Index" to the periodical literature on the economic, political, and military history of the war is a classified list of the titles of articles that have appeared during 1915. About 150 periodicals are cited, including twenty published in the United States and ten published in France. There is an alphabetical list of authors' names. The titles of the articles are classified under more than 250 headings, arranged in alphabetical order. The primary classification is in great measure topographical, being based upon the names of countries, and such headings as "Eastern Question" and "European War." These main sections are, however, subdivided into subsections, such as "Army," "Colonies," "Commerce," "Economic Condition," "Finance," and "Intellectual Life." In addition to the topographical headings, there are many others, such as "Aliens," "Architecture," "Civilisation," "Compulsory Service," "Eugenics," "Food Supply," "Liquor Problem," "National Characteristics," and "Social Psychology." In drawing up such a list it is obviously very difficult to decide what are the subjects of greatest interest to those who will consult the index. Compensation for any defects in the arrangement will be found in the large number of cross-references, which make it possible without much difficulty to trace the various entries relating to any subject that may not have been confined to one section.

THE letter of Sir Lauder Brunton which we published in our issue of February 10 (vol. xcvi., p. 649), advocating the introduction of Latin as an international language, has inspired several communications on the subject for which we are unable to find space. Mr. L. F. Richardson, of Eskdalemuir Observatory, directs attention to the simplicity of "Ido," which has been suggested as an international language, and points out that the language can be read by anyone. Mr. F. H. Perrycoste, Polperro, Cornwall, emphasises the saving of time which would result from the adoption of Sir Lauder Brunton's suggestion, and urges that most people would really be better off with a good equipment of Latin than they now are "with a more or less efficient or inefficient equipment of French and German and a practically useless semi-equipment of Latin acquired at enormous expense of school time." Mr. P. W. Stuart-Menteath, writing from Ciboure, Basses Pyrénées, maintains that "The revival of Latin as the unique language of science can alone secure the co-operation of the humanist, the intellectual independence of the Latin nations, and the essential unity of both their science and their religion." Mr. C. M. Houghton urges the advantages of Esperanto, the inventor of which was an adherent to the Latin project for many years before he constructed his artificial language for international use. He adds that Mr. W. J. Clark's "International Language" (Dent, 1s. net) "contains a *résumé* of the history of the problem and its solution from 1653 up to 1910, together with a large amount of other valuable information."

IN future the journal hitherto known as the *Journal of Economic Biology* will bear the name of the *Journal of Zoological Research*, the subject-matter of which will be confined to original zoological research—systematic and anatomical. The style and price of the periodical will remain unaltered.